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Subject: Comments on Transmission R&D Workshop

I thank the CEC PIER Program Energy System Integration staff for including me on the list of invitees for the Transmission R&D Workshop held on March 12, 2002.

It was requested that comments on the presentations be made by March 19th. The following are my comments:

Scenario Analysis Project

I applaud the use of scenario development. It is a relevant exercise to open up the thought process for the identification of technologies to support credible future states. Dr. Ito's work in this area and presentation was quite good. I particularly endorse the implicit conclusion that, no matter what happens in the long-term, there is a pressing need and there will be a continuing need for utilities to deploy technology to squeeze every last watt of capacity from the existing system. Generally lumped into the category of "real-time rating systems", there are significant impact areas within which PIER funded R&D can have influence. First, while there is a plethora of information about real-time ratings in the literature, there is a need for an objective source (PIER!) to fund the development of a tool kit which utilities could use to go thru the process of evaluating what can be expected from such a rating system and then going thru the process of implementation. My thought here is that the information should be vendor neutral and be solely focused on the utility user. Since several California utilities are interested in this technology area, they will provide a natural foundation for such a project. It would ultimately be the synthesis of the utility focused approach to successful application of this technology. Demonstration projects will also accelerate the acceptance and utilization of these methods. Note that while Investor Owned utilitite might lead this effort, the results will trickle through the industry.

Also, while the use of real-time ratings is a good first-step of the strategy to increase utilization of existing rights-of-way capacity, the option of voltage upgrading of transmission lines and the use of high phase order transmission should also be explored. This later option can most effectively be explored in concert with the California utilities. This tool / option would seem to be relevant to all of the scenarios of this report. However, it is slightly off the conventional radar screen and does not enjoy as prominent a position in the Priorities as it could.

Another implicit conclusion of multiple scenarios is that distributed resources (DR), including renewables, will likely proliferate faster than new transmission capacity and new supply. However, there is a missing component in the dialog that purports to make tradeoffs among new transmission capacity, new generation, and DR . . . that missing component is the power delivery reliability that can be expected under various options considered. Right at this moment we (in an electric system sense) are "benefiting" from the terrible economic down turn. Electricity demand in the Bay Area took a turn down (along with the economy) of 10~15% Thus, even though Path 15 is still there, and little new generation has come on line, we are not facing the supply shortages we had a couple of years ago. When the economy comes back and the dark buildings that line 101 turn their

lights on, demand will surge and we will find ourselves in the "hard place" we were recently in. While one may be able to balance the MW "books" with DR, it is not the same as generation that must be operated and has a known reliability and availability. The whole issue of reliability of delivered electricity under various levels of DR utilization is a good area for PIER research.

Electric Transmission R&D Assessment and Gap Analysis

This Navigant report is excellent. Rob and Peter did a great job presenting the work. My comment on this report is to offer both applause and a description of a research effort that is in its nascency which would add an "attractive opportunity for consideration". It is also a data point that would occupy that upper right part of the Potential Research Initiatives diagrams. Briefly, our friends at Material Integrity Solutions in Berkeley have come up with a low cost shape memory alloy core for a transmission line conductor that has the (incredible) property of reducing sag at temperatures that are greater than about 100*C. They have taken the operational element of SLiM, which is shape memory alloy - but definitely not low cost - and have determined a make-up and manufacturing process that will provide the properties desired. They are presently looking for funding sources for the next steps of this development. I am attaching a write-up on this conductor and will be forwarding it to Peter Mackin too.

Proposed Implementation Strategy

This was quite unexpected and very thought provoking. I agree with several of the discussers at the workshop: this looks like a good plan that is well thought out with strategic integration across research areas built into the model. My only comment on the plan presented is that some sort of lateral connection at the Focus Area Lead level or possibly the TAC level would indicate the mission of promoting collaboration between research implementers as well as among technology areas.

I will be personally very interested in the development of the Focus Area Lead roles and responsibilities. My experience at EPRI in managing a diverse portfolio of projects oriented to transmission hardware and software could be a resource to staff when developing this job specification. Additionally, I will be interested in responding to the solicitation for the Transmission version of this position when the time is right for that. My background not only includes proven project management and results delivery, but there is also a strong component of getting the results of research commercialized and into the market place. To that end, I am attaching my resume.

The presentations of this workshop show just the tip of the work that ESI staff have been undertaking. The results of the effort look quite good. Not to diminish the hard work that it has taken to get to this point, but, now the rest of the hard work of implementation is ahead. Good luck in your efforts!

Vito.

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